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Abstract

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1 Introduction [1]

The relationship between institutional fragmentation of urban regions and inequality in government service levels is subject to a long-running debate. On the one hand, it is argued that fragmented governmental settings produce a systematic mismatch between fiscal resources and public needs and thereby perpetuate income inequality. On the other hand, polycentric government is presented as more responsive to residents' needs, and it is argued that issues of income distribution can be addressed by voluntary inter-municipal agreements. At the heart of the debate is the question to understand "the redistributive consequences of fragmented governmental structures within metropolitan areas" (Lowery, 1999b: 8).

This paper aims to contribute to this debate by a comprehensive empirical analysis of the seven largest metropolitan areas in Switzerland, studying the relationship between territorial patterns of resident wealth on the one hand, and levels of municipal public services on the other hand. Focusing particularly on the effect of intergovernmental cooperation in the metropolitan areas under scrutiny, we aim to explore the redistributive effects of the multi-level compound of governance that often characterises metropolitan areas.

The analysis is presented in four steps. In the theoretical section, we review and discuss the main arguments of the debate on the relationship between institutional fragmentation and social inequality and present its major propositions that will be at the core of the empirical enquiry. We then briefly expose the data and method used, before presenting the empirical findings. In the discussion, we wrap up the findings and discuss their relevance.

2. Sorting and public service in the fragmented metropolis: theoretical expectations

In many countries across the world, urban areas have expanded irrespective of administrative boundaries of local government. Institutional fragmentation of metropolitan areas is widespread. Obvious drawbacks resulting from this situation have sparked a long-running scientific debate about the best way to organize governance in metropolitan areas. This debate has coined three intellectual traditions (for an overview see Ostrom, 1972, Lefèvre, 1998, Lowery, 1999a, Kübler,

[1] This paper is based on research conducted for the project *Cleavages, governance and the media in European metropolitan areas*, financed by the National Centre of Competence in Research *Challenges to Democracy in the 21st Century* at the University of Zurich.

2003, Savitch and Vogel, 2009). The first, so-called *metropolitan reform tradition*, advocates institutional consolidation by territorial reforms, arguing that service delivery will be more efficient and socially equitable when governmental units are larger. In stark contrast to this, the *public choice perspective* argues that institutional fragmentation of metropolitan areas is desirable, as it leads to competition between local governments and thereby to efficient allocation of public resources. Public choice scholars hold that area-wide governance will emerge by itself, as localities engage in voluntary cooperation and settle conflicts between them in order to realize economies of scale. Emphasising the merits of self-governance between autonomous localities, the public choice perspective therefore strongly opposes institutional consolidation and centralized government as advocated by the metropolitan reformers. For a long time, the debate on metropolitan governance has been characterized by a confrontation between these two perspectives, leading to a dispute between advocates and opponents of institutional consolidation (Lowery, 1999a) via municipal amalgamation, city-county consolidation (in the USA) or the setting up of new scales of government at the metropolitan level - so-called metropolitan governments. More recently however, a third perspective has emerged, emphasizing the genuine role of formal and informal policy- networks in metropolitan governance (Wallis, 1994, Savitch and Vogel, 2000, Brenner, 2002). Provisionally labelled *new regionalism,* this third perspective conveys a more relaxed view on the design of institutional territorial institutions in metropolitan areas. Routes to new regionalism, it is argued, can be diverse (Savitch and Vogel, 2000): they may include institutional consolidation, but intergovernmental cooperation between autonomous localities, or policy-networks involving non-state actors are considered as functional equivalents, as long as they successfully associate those actors that are relevant to policy-making.

2.1 The Social Stratification and Government Inequality (SSGI) thesis

Equity has been at the very heart of the debate on metropolitan governance ever since, and has been a matter of intensive dispute between metropolitan reformers and public choice theorists. In a nutshell, the dispute is about whether the fragmentation of metropolitan areas into a large number of autonomous jurisdictions perpetuates and reinforces social inequalities - as the metropolitan reformers claim - or whether it does not - as the public choice theorists argue.

The metropolitan reform position has been elaborated in what is known as the *Social Stratification and Government Inequality (SSGI)* thesis. It was originally developed by Hill (1974) and Neiman (1976) on the basis of evidence showing that social inequality in US metropolitan areas is strongly associated with the degree of governmental fragmentation. They

argue that a fragmented governmental setting, against the background of residential sorting and social segregation, leads to a situation where poor municipalities lack the public resources necessary to address their residents' needs. In addition, the small size of jurisdictions in fragmented settings enables concentrations of wealthy residents to influence municipal policies so as to reduce redistribution and keep taxes low. The result is a systematic mismatch between resources and needs, whereby income inequalities are perpetuated and even reinforced. In an article published in the early 1980s, Elinor Ostrom (1983) provides a compelling synthesis of the SSGI thesis as a set of eight propositions (see Box):

Box 1: Eight propositions derived from the SSGI thesis

P1:	Families with similar resources, beliefs and habits regarding living patterns will tend to seek residences near one another.
P2:	Residents tend to use municipal powers, such as zoning and other land use controls, to enhance the relative fiscal position of the jurisdiction in which they live and the social homogeneity of the neighbourhood in which they live.
P3:	Suburban municipalities are consequently divided into many relatively homogenous communities of the poor, the middle class, and the wealthy.
P4:	The larger the number of the municipal governments in the metropolitan community, the greater the inequality in the distribution of fiscal and other resources among them.
P5:	'The higher the social status of a jurisdiction, the greater the level of resources available to support public services' (Neiman, 1982: 221).
P6:	The higher the level of public resources allocated to a service, the higher the level of services received by a population living in a jurisdiction.
P7:	Central cities tend to allocate services in favour of the poor.
	Thus
P8:	'Municipal government becomes an institutional arrangement for promoting and protecting the unequal distribution of scarce resources' (Hill 1974: 1559).

Quoted from Ostrom (1983: 94-95)

Numerous empirical investigations on metropolitan social segregation, mainly in the US, rest upon the SSGI thesis. A drastic illustration is the American Apartheid argument made by Massey (1993), according to which the governmental fragmentation of the US metropolis has perpetuated and reinforced racial segregation and poverty among African-Americans. In a similar vein but more subtly, Downs (1994) has pointed out the mechanisms of exclusionary zoning, by which small-sized and wealthy jurisdictions use their autonomy to restrict housing choices for disadvantaged groups and ensure that the rich can stay among themselves (Downs, 1994). And, based on a transaction cost model, Lowery (2000) has shown that governmental fragmentation of the US metropolis enables the rich to sort into wealthy municipalities thanks to the reduction of information costs in residential choices.

2.2 Debating the SSGI thesis

Elinor Ostrom, in her article, not only provides an overview of the main propositions forming the SSGI thesis, but mainly aims at formulating a consistent public choice critique (Ostrom, 1983). For a start, she argues that there is enough theoretical and empirical evidence to accept P1 (residential sorting according to social status and lifestyles) , as well as P2 (residents' preferences shape municipal policies) as plausible. But the remaining propositions, she argues, are highly questionable. Empirical evidence in support of P3 (emergence of distinct and homogenous wealthy, middle class and poor suburbs) is scarce; examinations of P4 (governmental fragmentation reinforces fiscal imbalances) generally suffer methodological shortcomings; evidence regarding P5 (wealthy jurisdictions will spend more on public services) suggests that the effects of social status on local expenditures are complex, due to the multi-level character of metropolitan governance that influences or compensates local choices; P6 (high expenditures means high levels of service) downplays differences in service efficiency across municipalities; P7 (central cities are more attentive to the needs of the poor) ignores that smaller bureaucratic units can be more responsive to residents than larger ones. Finally, given the shaky empirical or theoretical basis of the previous propositions on which it is based, Ostrom concludes that P8 is unwarranted and must be refuted.

In her argumentation against the SSGI thesis, Ostrom pinpoints that much of the existing research on the relationship between governmental fragmentation and social inequality in metropolitan settings does not pay sufficient attention to the multi-level character of metropolitan governance. The main problem of existing SSGI research, she argues, is that it suffers from a problem of scope: "The SSGI assertion that fragmentation is the cause of inequity in service delivery ignores the role of overlapping governmental units in redistributing resources at county, state, and federal levels to municipalities with a poor resource base. … To understand distribution patterns in metropolitan areas, one must examine the compound system and not just one horizontal layer" (Ostrom, 1983: 93).

Reacting to Ostrom's critique from a neoprogressive (i.e. renewed metropolitan reform) perspective, Lowery (1999b) takes the debate a step further. On the one hand, he argues that new empirical evidence in fact buttresses the SSGI thesis assumptions on residential sorting and segregation in the US metropolitan areas (P1 to P4). There is now a more fine-grained understanding on segregation as an effect of sorting rather than exclusion, i.e. pull factors (e.g. municipal tax-service packages) are more important for residential choices than push factors (e.g.

housing, job opportunities, family reasons). In the US, these pull factors continue to make race the most powerful aspect of social sorting in the housing market, and Lowery quotes evidence showing that P3 is indeed plausible: income sorting and racial segregation by jurisdiction has increased in US metropolitan areas since the 1990s, with the obvious effect on municipal tax-bases. Regarding spending choices of municipalities (P5 and P6), Lowery quotes evidence from the US to show that Tiebout competition between municipalities in governmentally fragmented metro areas is indeed associated with low spending and low taxes, rather than more services for the poor.

On the other hand, Lowery takes a strong stance against Ostrom's rebuttal argument that intergovernmental coordination shapes distribution patterns in metropolitan areas. He agrees with Ostrom that it is theoretically plausible to assume a role for higher level governments or voluntary intermunicipal agreements: State governments could indeed decide and enforce redistributive policies, or municipalities could indeed agree on a plan to share their tax-base. But he argues that, at least in the US, this is simply not going to happen: "As a realistic prescription of a practical solution to the problems raised by the SSGI thesis, it leaves much to be desired. … Still, redistribution by higher levels of government is an attractive solution to the SSGI problem. So too is the *Independence Day* notion that an invasion from outer space will erase ancient racial, ethnic, and class divisions as we discover shared interests in a common struggle to kill aliens. It remains unclear which will occur first" (Lowery, 1999b: 16). As long as the multi-level compound of metropolitan governance does not engage in redistribution, he argues, the SSGI thesis is still valid.

Lowery's rejoinder also explicitly addresses the new regionalist idea of heterarchical policy-networks playing a role in metropolitan governance. Given the fact that these policy-networks are consensus based, they are unsuitable for redistribution: "Any one city government can veto redistribution among the separate governments found within a metropolitan area" (Lowery, 1999b: 16). It follows from this that the contribution of new regionalist approaches to improve metropolitan governance is limited to policies and services that produce a collective benefit: examples would be transport, economic development, or amenities such as theaters, operas, concert halls. However, new regionalist approaches will be inherently unsuitable for zero-sum games such as redistribution - where you take from some to give to others.

2.1 Exploring the SSGI thesis in the Swiss context

From a research perspective, the current state of the debate suggests several avenues for research that need to be embraced for the further development of the SSGI thesis.

First and most importantly, knowledge about the possible redistributive effects of the multi-level compound of metropolitan governance - as pointed out by Ostrom - is still lacking. All the while Lowery's theoretical and empirical arguments about the unlikeliness of such an effect are plausible, it should not be ex ante excluded that it actually happens - under conditions and circumstances that remain to be identified.

Second, and related to the first point, it is striking to note that political science research on the SSGI thesis seems to have been limited to the US context. It is thus unclear to what extent the propositions and findings can be generalized, particularly when we want to better understand the redistributive effects of arrangements of multi-level governance, and the conditions under which such effects occur. Indeed, if we follow Lowery, examples of multi-level or voluntary redistributive policies are very rare in the US metropolitan areas, which hence do not appear as the best place to study them. It is therefore high time for an exploration of the SSGI thesis in a context outside the US.

This is the goal of this paper, in which we explore, within Swiss metropolitan areas, the relationship between territorial patterns of resident wealth on the one hand, and levels of municipal public services on the other hand, and seek to account for the effects of intermunicipal cooperation and the activities of higher level governments on this relationship.

3. Data and method

The analysis in this paper implements a cross sectional research design focusing on 456 municipalities located within the seven major Swiss metropolitan areas. We examine variations across these municipalities, cooperation between them, as well as their relationships with the next higher level government: the cantons.

The analysis uses data compiled from three different official sources. First, data on the territorial extension and the institutional structure of metropolitan areas, as well as municipal-level aggregates of socio-demographics, geographical characteristics and election results was drawn from the website of the Swiss Statistical Office (SSO). Second, the core figures of Swiss public finance at the federal and the cantonal level stem from documents published by the Federal

Finance Administration (FFA), the State Secretariat for Economic Affairs (SECO), as well as the Federal Tax Administration (FTA). The FTA's website also provided municipal level aggregates of data on residents' taxable income, on income distribution within municipalities, as well as on the overall revenues from federal income tax. Third, public finance data of the 456 municipalities located within the metropolitan areas under scrutiny was collected from statistical offices and financial oversight authorities of the cantons to which these municipalities belong. Thanks to generous help of contact persons within these various organisations, data collection was largely unproblematic - as is testified by the low number of cases with missing values on some variables (a maximum of 19 out of 456) (see Table 9 in the methodological appendix).

While the collection of data was quite straightforward, the operationalization of the variables proved to be a more challenging endeavour, especially for variables relating to municipal public finance. Efforts to standardise public sector accounting in the whole of Switzerland date back to the early 1980s, and have recently (in 2008) been strengthened with the publication of new guidelines (*Harmonisiertes Rechnungslegungsmodell für die Kantone und Gemeinden*) based on International Public Sector Accounting Standards.[2] However, even though most of the twenty-six cantons and the municipalities within them now present their accounts according to common principles, some differences across cantons, and sometimes even differences across municipalities within cantons remain. In order to ensure the commensurability of municipal public finance data for the subsequent analysis, some reclassification and recoding of the data was necessary (see Table 9 in the methodological appendix).

On the one hand, municipal expenditures were classified according to three broad functional categories: the first category consists of expenditures in the field of general administration, the second category contains redistributive expenditures (health, public transport, welfare) and the third summarizes expenditures for amenities and operational costs (leisure, culture, environmental protection, public safety, and industrial services). However, there are large differences across municipalities with respect to how they organise public schools and their budgets: in some municipalities, expenditures for schools would be included in the municipal budget, while others have an independent school district with its own budget.[3] We therefore

[2] See: www.ifac.org

[3] For example: in the canton Zurich, the school budget is accounted for differently across municipalities. Whereas some communes have a school budget, education is excluded into specialised entities, the *Schulgemeinden* (school communities), in other municipalities.

chose to exclude education from the functional classification of municipal expenditures altogether.

On the other hand, particular care was given to the measurement of transfer payments in the public finances of a municipality - not only because transfer payments are a core aspect in this paper, but also because the precise labelling of transfer payments in the municipal accounts was found to vary considerably. More precisely, transfer expenditures were operationalized as the sum of expenditure entries labelled as 'compensation of other jurisdictions' (*Entschädigungen an Gemeinwesen*) or 'contributions' (*Eigene Beiträge)* to municipalities, the canton, the federation or intermunicipal cooperation schemes. Transfer revenues were operationalized as the sum of revenue entries labelled as 'refunds from other jurisdictions' (*Rückerstatttungen von Gemeinwesen*) and 'contributions' (*Beiträge für eigene Rechnung*) from municipalities, the canton, the federation or intermunicipal cooperation schemes. This is a rather conservative operationalization of transfer payments - both for expenditures and revenues - as transfers might also be hiding in other parts of the municipal account. Moreover, this operationalization does not allow, for the time being, to distinguish between vertical transfers (i.e. between a municipality and higher levels of government) and horizontal transfers (i.e. between municipalities).

4. Empirical findings

4.1 Metropolitan areas in Switzerland: extension and institutional structure

During the 20th century, Switzerland has been profoundly transformed by a still ongoing process of metropolitanization. This process has revealed a metamorphosis of relevant elements of urban centrality (seeBassand, 2005). Externally, metropolitanization involves the connection of urban societies to a global order of urban networks. Internally, it has led to a recomposition of the urban space, in the sense that metropolitan areas[4] are nowadays the dominant form of human settlement in Switzerland. These metropolitan areas are increasingly functionally integrated, mainly thanks to the development of high capacity transport infrastructure. Spatial mobility of goods and persons allows an increasing functional specialization of soil, leading not only to accelerated

[4] The notion of metropolitan area originates in the US Census Bureau's terminology used to define areas of functionally integrated urban settlements spread over different administrative boundaries. The official nomenclature of territorial statistics used by the Swiss Statistical Office uses the term of *agglomerations* (in German: Agglomerationen; in French: agglomérations; in Italian: agglomerati). Commuter patterns are the core criterion used for their operational measurement Schuler, M. (1984) *Abgrenzung der Agglomerationsräume in der Schweiz 1980/Délimitation des agglomérations en Suisse 1980,* Bern, Bundesamt für Statistik.. Conceptually, the Swiss *agglomerations* are thus equivalent to the US Metropolitan Areas Schuler, M. (1999) Régionalisation et urbanisation: des concepts convergents? *Département d'Architecture.* Lausanne, Ecole polytechnique fédérale de Lausanne.. Throughout this text, we will use the term 'metropolitan areas' as a synonym of *agglomerations*.

urban sprawl and further expansion of metropolitan areas, but in the same time to social segregation within them.

Among the fifty functional metropolitan areas delimited in the latest available official definition (Schuler et al., 2005b), seven have a population close to or more than 200'000 inhabitants and are included in the subsequent analysis: the metropolitan areas of Zurich, Basle, Geneva, Berne, Lausanne, Lucerne and Lugano (Table 1). Taken together, they cover the territory of 456 municipalities[5] and total roughly three million inhabitants, thereby representing about sixty percent of the country's urban population.

Table 1: Demographic and institutional structure of seven major Swiss metropolitan areas 2010

Metropolitan area	Overall population	Overall number of municipalities	Index of geopolitical fragmentation
Zurich	1,185,214	131	3.5
Basle*	501,285	74	4.4
Geneva*	527,764	74	4.0
Berne	352,470	42	3.4
Lausanne	334,908	69	5.4
Lucerne	209,224	16	2.1
Lugano*	140,629	50	8.9

*excluding municipalities located in neighbouring countries of cross-border metropolitan areas
Source: Swiss Statistical Office, population census data

In contrast to most countries of Northern Europe, the local government structure in Switzerland has not been subject to comprehensive territorial reforms in the 20th century. Municipal amalgamations have taken place incrementally and sporadically. As a consequence, municipalities are small and suburbanization is high; in a typical Swiss metropolitan area, roughly two thirds of the overall population lives in suburbs outside the core city. This is reflected in the index of geopolitical fragmentation (Zeigler and Brunn, 1980) of Swiss metropolitan areas (Table 1). In international comparison, geopolitical fragmentation of Swiss metropolitan areas is among the highest in the developed world (overall index value 7.3) and, in that, comparable to the institutional structure found in metropolitan areas of the United States which is highly fragmented as well (overall index value: 7.1) (Hoffmann-Martinot and Sellers, 2005).

[5] This number does not include the municipalities of international metropolitan areas (Basle and Geneva) located outside of Switzerland.

4.2 Territorial patterns of social disparities in the Swiss metropolis

Residential segregation across municipalities within Swiss metropolitan areas has increased towards the end of the 20th century (Huissoud et al., 1999), not only with respect to social status (i.e. mainly income), but increasingly with respect to choices of lifestyle (Hermann et al., 2005). Patterns of residential segregation in Swiss metropolitan areas do not simply set off the core cities from the suburbs, but social disparities also exist across the suburbs. These patterns are captured by the typology of Swiss municipalities used by the Statistical Office (Joye et al., 1988, Schuler et al., 2005a), that distinguishes four types of municipalities within Swiss metropolitan areas: core cities, inner suburbs, affluent suburbs and periurban suburbs.[6] These municipalities are distinct not only with respect to their geographical characteristics and location within the metropolitan areas, but also in terms of social status of their residents. For the seven metropolitan areas under scrutiny here, this is nicely shown in Table 2:

- Core cities are large and have a socially heterogeneous population, with very high proportions of immigrants. The unemployment rate is high and resident's wealth is low.
- Municipalities in the inner suburban belt are smaller than core cities, but still relatively large. The share of immigrants is above average, as is the unemployment rate. Resident wealth is below average - these clearly are the poor suburbs of Swiss metropolitan areas.
- Affluent suburbs are distinctive for their very high level of resident wealth, epitomized by the high average taxable income. Proportions of immigrants are relatively high. But to the difference of the other suburbs, these are mostly high skilled migrants.
- Periurban suburbs are located at the outskirts of the metropolitan areas. They are rather small in terms of population and density is low. The share of recently constructed, single family housing is high. The proportion of immigrants is very low and resident wealth is average.

[6] The original denomination of these types of municipalities are *centres* (core city), *communes suburbaines* (inner suburbs), *communes riches* (affluent suburbs), *communes périurbaines* (periurban suburbs).

Table 2: Social disparities within the seven major Swiss metropolitan areas; in 2006/10

	Core cities	Inner suburbs	Affluent suburbs	Periurban suburbs	Overall
Overall number of municipalities 2010	7	175	71	203	456
Population 2010 (mean)	158,624	8,280	4,432	1,859	7,130
Foreign born 2010 (%)	40.1	29.2	32.6	19.9	25.8
Unemployment 2010 (%)	3.3	2.6	2.0	1.8	2.2
Median taxable income 2006 (in CHF)	51,086	56,947	76,244	61,580	61,935
Mean taxable income 2006 (in CHF)	68,138	73,226	136,639	80,799	86,421
Municipal gini coefficient of taxable income 2006 (mean)	0.393	0.358	0.520	0.368	0.388

Source: Swiss Statistical Office, population census data

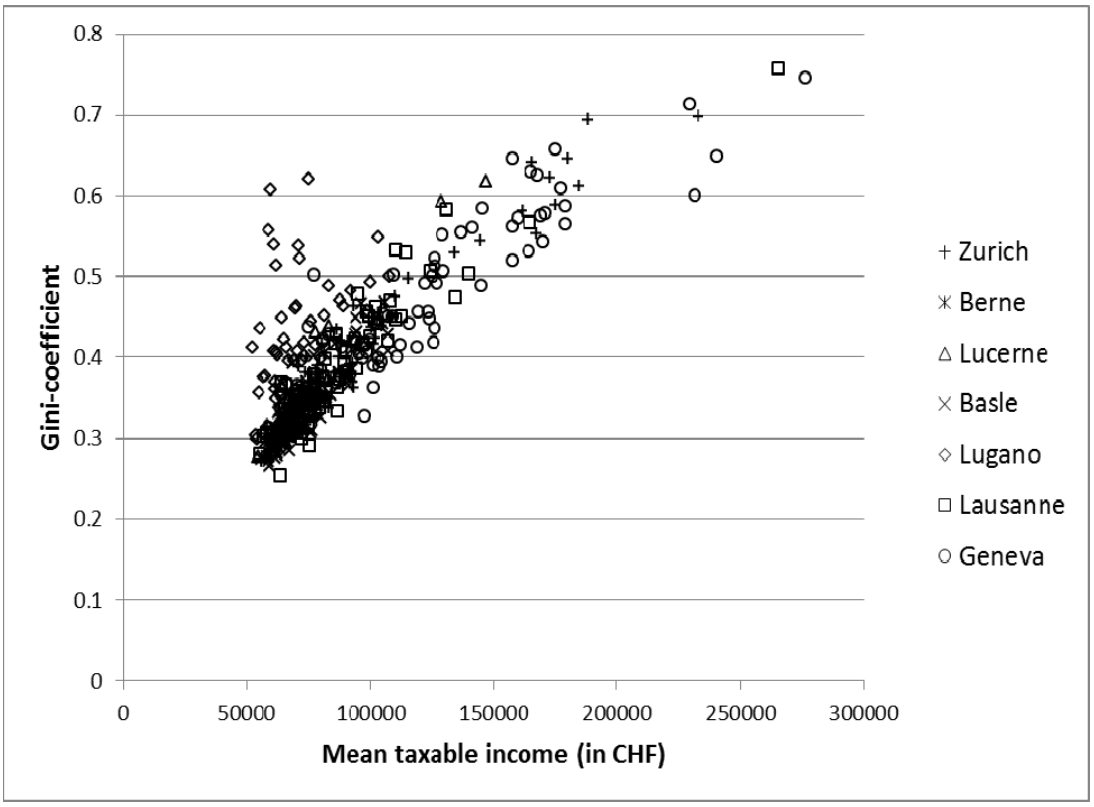
With respect to the distribution of income within these municipalities, the figures in Table 2 show a number of interesting aspects. For all the four types of municipalities, the mean income is clearly above the median income, indicating that the number of taxpayers with very high income is rather small. This is also suggested by the average municipal Gini coefficients[7] for income in the four types. Interestingly, the Gini coefficient is clearly highest in affluent suburbs, suggesting that the range between high and low incomes within this type of municipalities is high. No differences can be observed between the other three types: the Gini coefficient is slightly higher in core cities than in inner and periurban suburbs.

Figure 1 allows a closer look at the distribution of income within the municipalities. It shows a close to linear relation between mean taxable income and the Gini-coefficients for taxable income at the municipal level. The heterogeneity of wealth thus increases with higher average income. (NB: the values of the Gini-coefficient for taxable income at the municipal level is not significantly correlated [$p>0.05$] with the number of taxpayers living in that municipality. Hence, we can exclude statistical effects of municipality size on income heterogeneity therein.) Whereas there are several rather poor municipalities with a rather homogenous population regarding the distribution of income, there is no affluent municipality with a homogeneously wealthy

[7] This Gini coefficient theoretically ranges from 0 (all residents of a municipality have the same taxable income) to 1 (all taxable income in a municipality is earned by one resident, while all the others earn nothing) and can thus be used as indicator for homogeneity (low values) - or heterogeneity (high values) - of income.

population. Rather, the data suggest that in these municipalities, the high income average is due to the presence of some very rich taxpayers, while less wealthy residents continue to live there. Nevertheless, poor municipalities tend to be more homogenous, as is shown by the clustering of a large number of municipalities in the lower left quadrant of Figure 1. In other words: poor municipalities are rather homogenous but affluent suburbs are not. Affluent municipalities according to the typology of the Federal Statistical Office are defined as communes with high per capita revenues from federal income tax, but this does not mean that the corresponding population is a homogeneously wealthy one. In this sense, 'affluent suburbs' appear to be misnamed: a more adequate label would be 'suburbs with some very affluent taxpayers'.

Figure 1: Distribution of residents' taxable income in municipalities of seven Swiss metropolitan areas (data for 2006)



Source: Federal Tax Administration

While we can thus distinguish clear territorial patterns of poverty and wealth within Swiss metropolitan areas, it must be emphasised that the spatial pattern of social hardship and economic wealth markedly differs between the seven metropolitan areas under scrutiny. This is shown by the metro level Gini coefficients measuring the distribution of unemployment (as an indicator for social hardship), as well as the distribution of federal income tax revenue (as an indicator for

wealth) across the municipalities within the different metropolitan areas (Table 3).[8] First of all, the coefficients suggest that inequalities of affluence are more pronounced than inequalities of social hardship. Indeed, in all seven metropolitan areas the distribution of unemployment across municipalities is more equal than the distribution of income tax revenues. Unemployment is distributed most equally in Basle, followed by Geneva and Zurich, and more unequally than average in Bern, Lucerne, Lugano and Lausanne. Differences in the spatial distribution of wealth are more substantial. Inequality of wealth between municipalities is most unequal in the metropolitan area of Zurich, followed by Lucerne, Geneva and Lausanne. It is less unequal than average in the metropolitan areas of Lugano, Basel and Berne. *Prima facie*, however, distributions of poverty and wealth across municipalities do not appear to be linked to the institutional structure of the metropolitan areas. Neither of the two metro level Gini coefficients is significantly correlated to the index of geopolitical fragmentation.

Table 3: Distribution of poverty and wealth in the seven major metropolitan areas

Metropolitan area	weighted Gini coeffcient of unemployment 2010	weighted Gini coefficient of per capita federal tax revenues 2008
Zurich	0.129	0.362
Basel*	0.124	0.211
Geneva*	0.127	0.318
Berne	0.150	0.173
Lausanne	0.164	0.316
Lucerne	0.153	0.354
Lugano*	0.156	0.215
Mean	0.143	0.278

*excluding foreign communes in cross-border metropolitan areas

4.1 Metropolitan patterns of public finance

After examining the territorial patterns of the distribution of poverty and wealth in the seven Swiss metropolitan areas under scrutiny, we now turn to determining the territorial patterns of public service provision therein. In order to do so, we must first examine the role of the different state levels, before examining aspects of municipal public finance.

[8] The value of these metro level Gini coefficients theoretically ranges from 0 (all municipalities have the same level of unemployment respectively income tax revenues) to 1 (all unemployment respectively all tax revenues concentrate in one single municipality). In order to eliminate the statistical effects of the unequal size of municipalities - measures of dispersion within a unit are influenced by the size of this unit - we use weighted Gini coefficients, i.e. the size of the population of the various municipalities was taken into account in the computation of the metro-level Gini coefficient.

Features of Swiss fiscal federalism

Switzerland is a federalist state with three levels of government: the federation, twenty-six federate states - the so-called 'cantons' - and roughly 2600 municipalities - called 'communes'. Swiss federalism can be considered as "decentralized federalism " (Braun, 2003a) due to the strong position of the cantons and the relative weakness of the federal government, not only in terms of legal competencies, but also in terms of fiscal resources and implementation power. The municipalities have no original powers granted to them constitutionally. The degree of municipal autonomy is subject to cantonal legislation, both in terms of legal competencies and fiscal resources. There is thus no unified 'Swiss' system of local government but rather twenty-six different cantonal systems. But in general, and compared to other federations, local autonomy is quite high in Switzerland.

At the core of Swiss federalism is the principle of tax autonomy of all three state levels, deeply enshrined in the federal constitution since 1848. Not only the federal government, but also the cantons and the municipalities have the right to raise their own taxes on income and property. This principle of tax autonomy has sparked fiscal competition at the subnational level, which has become a characteristic feature of Swiss fiscal federalism (Braun, 2003b). Fiscal competition between cantons has led to the emergence of a wide range of different cantonal tax regimes, which differ not only with respect to overall levels of taxes, but also with respect to the progressivity of income tax (Gilardi et al., forthcoming). Additionally, there is fiscal competition between municipalities within cantons, and the municipal tax rates differ quite substantially across municipalities .

These characteristic features of Swiss federalism are nicely reflected in the public finance figures shown in Table 4. The strong position of the cantons is mirrored in their share of the overall public expenditures (42.3%), which is considerably higher than that of the federation (33.6%) or of the municipalities (24.1%). Somewhat untypically, however, the federal government has a leading role in the field of social policy: the federal government's share (41.1%) of overall social expenditures exceeds that of the cantons (38.8%). But the municipalities have a substantial role in this policy field as well (20.1% of the overall social expenditures). On the revenue side, the cantons clearly have the lion's share (42.2% of overall public revenues), compared with the federation (34.5%), or the municipalities (28.4%).

Table 4: Swiss fiscal federalism: selected figures of public finance

		Federation	Cantons	Municipalities	Total
Overall public expenditures	in Mio. CHF	60'031	75'517	43'017	178'564
	in %	33.6	42.3	24.1	100.0
Total transfer expenditures	in Mio. CHF	37'850	34'186	12'219	84'254
	in %	44.9	40.6	14.5	100.0
	in % total exp.	63.1	45.3	28.4	47.2
Overall public revenues	in Mio. CHF	62'942	76'886	42'528	182'356
	in %	34.5	42.2	23.3	100.0
Total transfer revenues	in Mio. CHF	357	22'866	5'342	28'565
	in %	1.3	80.0	18.7	100.0
	in % total rev.	0.6	29.7	12.6	15.7
Overall social expenditures	in Mio. CHF	15'911	15'019	7'790	38'720
	in %	41.1	38.8	20.1	100.0
	in % total exp.	26.5	19.9	18.1	21.7

Source: Federal Finance Administration (FFA), Financial Statistics 2010

The figures in Table 4 also show the importance of transfer payments in Swiss fiscal federalism. Indeed, a large proportion of cantonal revenues (29.7%) consists of transfer payments that stem not only from the federation (vertical transfers), but also from other cantons (horizontal transfers). Transfers are also an important aspect in municipal finance: transfer payments account for more than a quarter of municipal expenditures (28.4%), as well as for a substantial part of municipal revenues (12.6%). Transfer payments are a sign of two tendencies in Swiss federalism. On the one hand, transfer payments are the result of *Politikverflechtung* - or 'joint decision-making' as Fritz Scharpf (1997)calls it. Indeed, the practice of policy-making in Swiss federalism rests on a multitude of mechanisms of intergovernmental cooperation, co-decision and co-financing, not only vertically across state levels (see Klöti, 2000), but also horizontally between jurisdictions at the same level (see Bochsler, 2010) - i.e. between cantons and between municipalities. On the other hand, transfer payments are at the core of equalization schemes that have been set up since the middle of the 20th century, in order to counteract horizontal fiscal imbalances at the subnational level. Equalization schemes exist both at the national level (horizontal equalization between cantons), as well as within cantons (horizontal equalization between municipalities).

However, this general pattern of Swiss fiscal federalism is subject to considerable variation between different cantons. Because municipalities are subjects of cantonal law, their rights and duties vary across cantons. This is evident from the figures on overall, social and transfer expenditures of those cantons with at least one municipality in one of the seven metropolitan

areas under scrutiny (Table 5). First of all, comparing the share of overall expenditures from cantons to the one of their municipalities, it appears that in the small urban cantons of Basel-City (BS) and Geneva (GE) more than 80% (GE) or even 98% (BS) of all expenditures come from the canton. This is not surprising because Basel-City consists more or less of the city Basle, whereas the highly centralized canton Geneva is strongly characterized by its central city. On the other side of the spectrum, we find Zurich, where total expenditures between canton and municipalities are close to fifty-fifty. Lucerne (LU), Aargau (AG), Solothurn (SO) and Schwyz (SZ) too, have a highly decentralized expenditure structure with around 40% of all expenditures coming from the municipalities. In the remaining six cantons, municipal expenditures make up for between 30% (Fribourg FR) and 35% of total expenditures. The 131 municipalities of the metropolitan area of Zurich are in three cantons that belong to the ones with the highest municipal share regarding total expenditures. A same picture appears regarding the smaller metropolitan area of Lucerne.

Regarding social expenditures, there are again Basel-City and Geneva, together with Nidwalden (NW) that have the smallest amount of expenditures by the communes. In these cantons, social expenditures are mainly paid by the cantons. On the other side, again Zurich with high 57% and Lucerne with over 40% have high shares of municipal social expenditures. Also Solothurn (SO) with a 40% share of municipal expenditures can be seen as a canton with high municipal social expenditures. This indicates a high municipal autonomy in these cantons.

Not only social expenditures by municipalities, but also transfer expenditures are highest in the canton of Zurich. 47% of all transfer revenues in the canton Zurich come from the municipalities. Taken together, the share of total as well as social and transfer expenditures between the canton and its municipalities is clearly highest in Zurich. On the other side, the cantons Basel-City and Geneva have large shares of expenditures paid by the cantonal level, indicating a rather low financial autonomy of the municipalities.

Table 5: Public expenditures of cantons and municipalities in the seven major metropolitan areas (in 2010)

Metropo-litan area	Total munici-palities	Cantons w. munici-palities	total expenditures				social expenditures				transfer expenditures			
			canton		communes*		canton		communes*		canton		communes*	
			Mio. CHF	in %	Mio. CHF	in %	Mio. CHF	in %	Mio. CHF	in %	Mio. CHF	in %	Mio. CHF	in %
Zurich	131	ZH: 104	11'536	50.5	11'308	49.5	1'902	42.6	2'560	57.4	4'730	52.6	4'258	47.4
		AG: 24	4'166	60.1	2'765	39.9	701	64.1	393	35.9	2'016	72.7	756	27.3
		SZ: 3	1'095	61.4	688	38.6	159	62.8	94	37.2	676	83.2	136	16.8
Basle	74	BS: 3	4'293	98.0	87	2.0	797	97.7	19	2.3	1'547	97.7	36	2.3
		BL: 52	2'421	69.8	1'048	30.2	458	70.9	188	29.1	1'313	85.9	216	14.1
		SO: 11	1'894	60.8	1'223	39.2	393	60.0	262	40.0	1'117	78.5	306	21.5
		AG: 8	4'166	60.1	2'765	39.9	701	64.1	393	35.9	2'016	72.7	756	27.3
Geneva	74	GE: 42	8'430	81.3	1'940	18.7	1'743	86.0	284	14.0	3'676	89.4	435	10.6
		VD: 32	7'708	67.4	3'737	32.6	1'761	67.5	847	32.5	4'110	79.4	1'065	20.6
Berne	42	BE: 39	10'129	68.1	4'740	31.9	2'158	63.4	1'243	36.6	4'744	72.7	1'781	27.3
		FR: 3	2'943	70.0	1'260	30.0	518	76.9	156	23.1	1'298	73.5	469	26.5
Lausanne	69	VD: 69	7'708	67.4	3'737	32.6	1'761	67.5	847	32.5	4'110	79.4	1'065	20.6
Lucerne	16	LU: 14	3'058	60.0	2'043	40.0	605	59.4	413	40.6	1'764	74.5	603	25.5
		NW: 1	331	67.1	162	32.9	51	90.0	6	10.0	169	92.4	14	7.6
		SZ: 1	1'095	61.4	688	38.6	159	62.8	94	37.2	676	83.2	136	16.8
Lugano	50	TI: 50	3'209	65.5	1'693	34.5	852	78.1	239	21.9	1'482	79.1	390	20.9

Source: Federal Finance Association FFA, Financial Statistics 2010

* sum of all communes within a canton, including commues outside the metropolitan areas

Municipal public finance in the seven metropolitan areas

Table 6 provides an overview of municipal finance in the seven metropolitan areas under scrutiny. It clearly shows that there are substantial differences across municipalities within metropolitan areas. In all seven metropolitan areas except Geneva (and Basle, where such data is not available), revenues and expenditures per capita are highest in the core cities. Periurban suburbs have the lowest per capita expenditures in all metropolitan areas except in Geneva. As we have seen previously, affluent suburbs are those where wealthy taxpayers live. Nevertheless, per capita municipal revenues and expenditures are not higher in affluent suburbs than in the other types of municipalities. This apparent paradox is explained by a look at the figures of the tax rate index: affluent suburbs indeed have the lowest tax rate. This means that taxpayers in affluent suburbs contribute a smaller proportion of their income as tax, compared with taxpayers living in other municipalities.

Second, there are also substantial differences between overall levels of per capita municipal revenues and expenditures across the seven metropolitan areas. Most significant are the differences in per capita social expenditures: they range from an average of 996 CHF in Basle to 2'225 CHF in Lausanne. This does not necessarily mean, however, that residents of the Lausanne metropolitan area are treated more generously than those in Basel. As we have seen previously (see Table 5), the share of the municipalities in social expenditures varies substantially across cantons and it might well be that low municipal expenditures are compensated by a higher expenditure levels of the canton. In order to account for these cross-cantonal differences, we have calculated the per capita of overall social expenditures, by adding the presumed cantonal social expenditures per capita in a municipality.[9] The new figure displays considerably smaller differences between level of social expenditures in metropolitan municipalities. Nevertheless, some significant differences remain both across and within metropolitan areas. Levels of social expenditures are low in the municipalities of the Basel, the Zurich and the Bern metropolitan areas, while they are high in the municipalities of the Lugano, the Geneva and the Lausanne metropolitan area. Lucerne is situated in the middle. With respect to municipal types, social expenditures are generally highest in the core cities, still quite high in affluent suburbs, but lower

[9] This is an extrapolation from the municipal social expenditures per capita, which was obtained by multiplying the per capita social expenditures of a municipality with the ratio between the cantonal and the municipal share in the overall social expenditures (see Table 5) .

Table 6: Municipal finance in the seven major metropolitan areas, means for municipal types (in 2010)

Metro. area	Type of municipality	Municipal revenues (CHF p.c.)[1]	Municipal expenditures (CHF p.c.)[1]	Municipal tax rate index[2]	Municipal social expenditures (CHF p.c.)	Overall social expenditures in municipality (CHF p.c.)*	Left parties (% of votes)[3]
Zürich	Core cities	20'897	20'978	109.6	9'639	16'804	42.9
	Inner sub.	5'425	4'966	97.1	2'112	3'813	23.5
	Affluent sub.	8'699	8'404	77.3	2'310	4'093	19.2
	Periurban sub.	4'456	4'064	96.8	1'266	2'479	22.2
	Overall	5'572	5'167	94.4	1'840	3'389	22.6
Basle*	Core cities	n.a	n.a	n.a	n.a	n.a.	47.6
	Inner sub.	4'193	3'152	97.3	1'221	3'929	37.2
	Affluent sub.	4'632	3'620	77.4	1'147	3'947	36.4
	Periurban sub.	4'041	2'701	100.6	847	2'650	32.4
	Overall	4'128	2'912	98.1	996	3'174	34.5
Geneva*	Core cities	5'799	5'104	107.4	978	6'992	47.3
	Inner sub.	3'975	3'286	102.6	946	5'301	38.0
	Affluent sub.	6'165	5'228	86.0	1'848	7'199	28.4
	Periurban sub.	5'552	4'700	95.4	2'067	6'884	32.4
	Overall	5'399	4'557	93.6	1'676	6'607	32.4
Berne	Core cities	9'257	8'368	90.9	3'613	9'884	52.5
	Inner sub.	4'869	4'178	86.6	1'861	5'091	30.2
	Affluent sub.	5'245	4'979	58.4	2'285	6'253	30.1
	Periurban sub.	3'942	3'170	92.2	1'190	3'256	28.4
	Overall	4'492	3'763	89.0	1'555	4'256	29.7
Lausanne	Core cities	13'232	12'287	112.6	2'808	8'642	56.6
	Inner sub.	5'576	5'003	95.7	2'147	6'610	42.0
	Affluent sub.	8'452	7'735	81.2	3'149	9'692	35.1
	Periurban sub.	5'347	4'649	96.9	2'005	6'170	37.0
	Overall	5'971	5'319	94.6	2'225	6'849	38.9
Lucerne	Core cities	8'580	7'549	87.2	3'652	8'998	39.8
	Inner sub.	5'597	4'318	92.5	2'231	5'497	21.7
	Affluent sub.	7'136	5'874	57.3	1'241	3'057	15.2
	Periurban sub.	4'488	2'845	91.6	1'068	2'631	19.8
	Overall	5'603	4'239	89.4	1'929	4'754	21.6
Lugano*	Core cities	7'336	6'535	78.8	2'562	11'688	23.8
	Inner sub.	5'228	4'320	85.0	1'482	6'763	21.5
	Affluent sub.	5'268	4'383	78.8	1'394	6'361	22.8
	Periurban sub.	3'849	3'074	96.0	1'088	4'963	27.8
	Overall	4'686	3'840	88.7	1'323	6'034	24.3
Overall	Core cities	10'850	10'137	97.8	3'875	10'501	44.3
	Inner sub.	5'038	4'336	94.9	1'764	4'971	30.2
	Affluent sub.	6'886	6'141	81.2	2'026	6'363	26.5
	Periurban sub.	4'505	3'698	96.8	1'346	3'938	29.2
	Overall	5'170	4'415	93.6	1'649	4'807	29.4

*excluding foreign communes in cross-border metropolitan areas

[1] without function education

Table 7: Municipal transfers in the seven major metropolitan areas, means for types of municipalites (in 2010)

Metropolitan area	Type of municipality	N	Revenues per capita (in CHF) without transfers	Expendiures per capita (in CHF) without transfers	Transfer revenues (% of total revenues)	Transfer expenditures (% of total expenditures)
Zürich	Core cities	1	21'014	22'515	1.0	4.6
	Inner sub.	56	5'097	4'753	8.2	20.2
	Affluent sub.	17	8'577	5'776	3.2	34.0
	Periurban sub.	54	3'967	3'505	12.2	26.9
	Overall	128	5'207	4'501	9.2	24.8
Basle*	Core cities	n.a.	n.a.	n.a.	n.a.	n.a.
	Inner sub.	25	4'010	3'090	11.9	31.4
	Affluent sub.	4	4'707	3'233	4.7	34.6
	Periurban sub.	42	3'891	2'851	9.2	31.4
	Overall	71	3'979	2'957	9.9	31.6
Geneva*	Core cities	1	5'640	5'034	3.1	6.6
	Inner sub.	19	3'764	3'488	5.1	19.7
	Affluent sub.	30	5'805	4'694	4.1	34.6
	Periurban sub.	24	5'062	5'155	7.5	40.8
	Overall	74	5'038	4'538	5.5	32.4
Berne	Core cities	1	7'332	6'101	23.2	35.2
	Inner sub.	16	4'140	2'645	14.5	46.0
	Affluent sub.	1	4'352	2'330	15.4	58.2
	Periurban sub.	21	3'735	2'257	6.8	44.6
	Overall	39	4'010	2'516	10.6	45.2
Lausanne	Core cities	1	11'969	23'451	11.8	12.9
	Inner sub.	26	4'886	6'364	13.8	44.1
	Affluent sub.	8	7'201	8'374	14.2	49.9
	Periurban sub.	27	4'681	5'972	13.5	44.9
	Overall	62	5'210	6'728	13.7	44.7
Lucerne	Core cities	1	8'536	6'769	5.9	25.4
	Inner sub.	8	5'601	4'435	10.4	29.8
	Affluent sub.	1	7'138	6'049	4.9	19.4
	Periurban sub.	4	4'429	2'909	13.8	43.7
	Overall	14	5'586	4'281	10.7	32.7
Lugano*	Core cities	1	6'971	5'213	7.2	29.6
	Inner sub.	20	5'145	3'085	5.9	36.4
	Affluent sub.	7	5'277	3'299	3.0	36.8
	Periurban sub.	21	3'766	2'413	9.0	36.9
	Overall	49	4'610	2'871	6.8	36.5
Overall	Core cities	6	10'244	11'514	8.7	19.0
	Inner sub.	170	4'695	4'204	9.7	30.2
	Affluent sub.	68	6'541	5'153	5.2	36.6
	Periurban sub.	193	4'149	3'646	10.2	35.5
	Overall	437	4'817	4'206	9.2	33.4

Sources: cantonale financial and statistical offices

in inner and periurban suburbs. Lausanne is an exception in the sense that affluent suburbs there show higher levels of social expenditures than the core city.

What role do transfer payments play in public finance of metropolitan municipalities? To answer this question, we calculated municipal revenues and expenditures without transfer payments (Table 7). Shares of transfer expenditures on total expenditures are lowest in the core cities, except in the metropolitan area of Lucerne. Whereas other municipalities have higher shares of transfers, core cities appear to be excluded from transfer systems insofar as they do not pay large amounts of transfers to other jurisdictions, and have only small shares of transfer revenues. Transfer payments are clearly more important in the suburban municipalities. Affluent suburbs turn out to be those with the highest share of transfer expenditures, while the share of transfer revenues is rather low. Compared with the other suburbs, they contribute more to transfer systems, but receive less. The reverse is true for inner suburbs and periurban suburbs: the share of transfer revenues is higher and the share of transfer expenditures is lower.

4.3 Explaining social expenditures in metropolitan municipalities

With respect to the SSGI thesis, one of the core questions to be answered is to what extent public resources are allocated to places where they are needed. In order to answer this question, we performed regression analyses on the overall per capita social expenditures in the municipalities (Table 8). Four different models were estimated. A dummy variable for core cities was included in all models in order to control for the fact that these present specificities in many respects.

The first regression model is a 'social needs'-model. It estimates the effects of socio-demographic characteristics which we assume to measure the extent of social needs in a municipality: the proportion of immigrants, the proportion of economically dependent residents (aged under 18 or above 65), the unemployment rate, as well as the median taxable income. The results show that social needs apparently do play a role in explaining the level of social expenditures: the higher the proportions of immigrants and economically dependent residents, the higher social expenditures in a municipality. The unemployment rate is not significantly associated with social expenditures. This might have to do with the fact that the unemployment insurance is a federal institution in Switzerland, and expenditures for unemployment benefits are not incurred by cantons or municipalities. Contrary to the expectations, however, the level of residents' tax income is not negatively but positively associated with social expenditures.

Table 8: Determinants of overall per capita social expenditures in municipalities of Swiss metropolitan areas

Variables	Model 1	Model 2	Model 3	Model 4
Constant				
Core city (dummy)	**.208**	**.085**	**.213**	.040
Foreign population (in percent, 2010)	**.386**			**.298**
Dependents (in percent, 2010)	**.171**			**.124**
Unemployment (percent seeking job 2010)	.062			.040
Taxable income (median, 2006)	**.164**			.032
Municipal revenues excluding transfers (per capita, 2010)		**.574**		**.493**
Municipal tax rate (index, 2010)		**-.150**		**-.178**
Revenues from transfers (percent of overall municipal revenues, 2010)		**.163**		**.184**
Votes for left parties (mean of share in 2007 and 2011 national elections)			**.156**	**.162**
Adjusted R2	0.312	0.413	0.083	0.573
Number of observations	436	437	438	436

Standardized OLS regression coefficients (boldface coefficients are significant at p<0.01)

The second model is a 'public finance'-model. It includes variables which we can assume to measure the financial situation and fiscal profile of a municipality. The results clearly indicate that the level of social expenditures in a municipality is influenced by characteristics of municipal public finance. It is positively associated with municipal revenues (the higher the public revenues of a municipality, the higher its social expenditures), and negatively associated with municipal tax effort (the lower the tax rate, the higher the level of social expenditures). The share of municipal revenues stemming from transfer payments also play a role: the more significant transfer payments are, the higher the level of social expenditures. Interestingly, a look at the explained variance show that the 'public finance'- model has a higher explanatory power (adj. R2=41.3%) than the 'social needs'- model (adj. R2=31.2%).

The third model is a 'political' model, showing that the level of social expenditures within a metropolitan municipality also depends on its electorate's political preferences. The higher the percentage of votes for left parties - whom we know to be more favourable to redistribution of income and expansive social policies - the higher the level of social expenditures.

Finally, the fourth model combines the three previous ones. The results show that most of the predictors remain significant. The level of social expenditures in a metropolitan municipality is not only influenced by social needs, but also by public finance and political preferences. Whether public resources are invested in social policies not only depends on the extent of needs

within a municipality, but also on whether the municipality was able to actually generated the revenues necessary to afford social policies - be that because they can extract resources from a good tax base or because they benefit from transfer payments by other jurisdictions. This indicates that, in Swiss metropolitan areas, public resources indeed seem to be allocated to places where there is a certain need, but that these needs are covered in a more comprehensive way in municipalities that are already affluent. The importance of the political factor also indicates that political choices at the municipal level play a crucial role: rich municipalities with weak left parties will be less likely to invest in social policies.

A closer look into the strengths of the predictors from the combined model shows that metropolitan geopolitical fragmentation plays a role (Figure 2). On the one hand, the relationship between social needs (measured by the percentage of immigrants) and the level of social expenditures is stronger in metropolitan areas that are less fragmented, and weaker in the more fragmented ones.[10] On the other hand, the effect of the financial situation of a municipality (as measured by municipal revenues per capita) is stronger in more fragmented metropolitan areas. This suggests that geopolitical fragmentation of Swiss metropolitan areas is associated to a mismatch between needs and resources. The more fragmented a metropolitan area, the less the allocation of policy resources in a municipality is associated with the extent of social needs within it, but rather with the municipal revenues that can be extracted from the residents. However, no clear results can be drawn with respect to the political preference effect - the relationship between left vote and social expenditures is, in fact, not statistically significant for the subsample of the more fragmented metropolitan areas.

Besides metropolitan geopolitical fragmentation, vertical relations between municipalities and their canton also play a role in determining per capita social expenditures in a municipality (Figure 3). In more centralised a cantons, the effects of social needs (measured by the percentage of immigrants) on social expenditures is stronger.[11] And in more decentralised a cantons, political preferences of a municipalities' electorate have a stronger effect on per capita social expenditures in this municipality. While centralisation is good for equity, local autonomy is good for

[10] The distinction between more and less fragmented metropolitan areas is based on a classification around the median of the geopolitical fragmentation index (see Table 1) (median = 4.0). More precisely, the metropolitan areas of Zurich, Bern, Lucerne and Geneva were classified as 'less fragmented'. The metropolitan areas of Basel, Lausanne and Lugano were classified as 'more fragmented'.

[11] The distinction between centralised and decentralised cantons is based on a classification around the median share of cantonal expenditures with respect to the overall social expenditures within a canton (see Table 4) (median = 67.5%). The cantons BS, BL, GE, FR, NW, VD and TI were classified as 'centralised'. The cantons ZH, AG, SZ, SO, BE, LU were classified as 'decentralised'.

Figure 2: The fragmentation effect: per capita social expenditures in municipalities as functions of metropolitan geopolitical fragmentation, as well as socio-demographic, public finance and political variables.

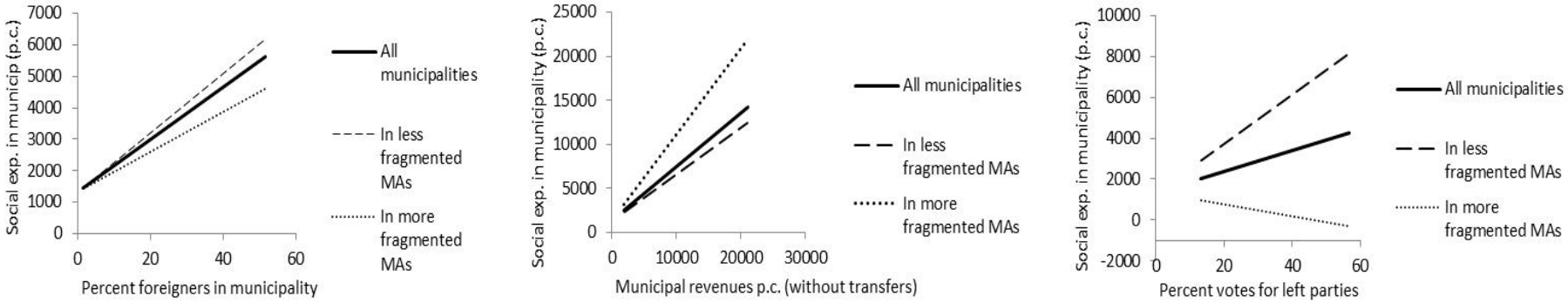
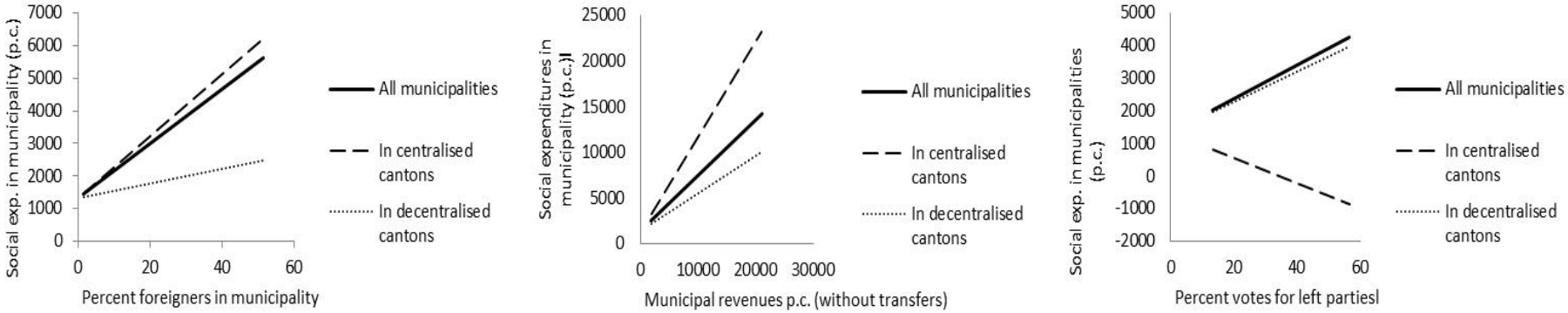


Figure 3: The centralisation effect: per capita social expenditures in municipalities as functions of centralisation/decentralisation of social expenditures within cantons, as well as socio-demographic, public finance and political variables



democracy. Quite unexpectedly, however, cantonal centralisation seems to reinforce the public finance effect: in centralised cantons, municipal revenues are a stronger predictor for social expenditures than in decentralised cantons.

5. Discussion

The general features of the Swiss case suggest that metropolitan areas in Switzerland are indeed a good empirical example to investigate the SSGI thesis, and particularly the aspects related to the intergovernmental and multi-level character of the metropolitan governance compound. In terms of the institutional setting, Swiss metropolitan areas are highly fragmented into large numbers of relatively small jurisdictions - and in that aspect very much resemble the US metropolitan areas on which most of the SSGI research has been conducted to date. In terms of governance, municipal autonomy is comparatively high in Swiss federalism and allows substantial discretion in local choices. This is also similar to the US case. But, to the difference of the US, Swiss fiscal federalism entails a number of transfer and equalization mechanisms, not only vertically between cantons and municipalities, but also horizontally between municipalities. The characteristics of these mechanisms vary across cantons and thereby make the Swiss metropolitan areas particularly appealing cases to study the effects of higher-level government interventions and intergovernmental coordination on redistributive policies in metropolitan areas.

With respect to residential sorting, we do see that there are territorial patterns of social segregation according to social status and lifestyle, distinguishing between core cities, inner suburbs, periurban suburbs and affluent suburbs. The SSGI proposition P1 is thus confirmed: households with similar status or lifestyle tend to seek residence near one another. However, the homogeneity of these municipalities varies. Poor municipalities tend to be more homogenous. Affluent municipalities are actually only affluent in average, due to the presence of a small number of very rich residents. For the Swiss case, proposition P3 of the SSGI thesis is thus not entirely supported: while social segregation in Swiss metropolitan areas has led to the emergence of relatively homogenous poor suburbs, we do not see similarly homogenous wealthy places.

Nevertheless, our analysis of the relationship between socio-demographic and financial data clearly shows that social segregation across municipalities in Swiss metropolitan areas is paralleled by a segregation of the tax base, and also affects service levels across municipalities. Even though the transfer systems have a moderating effect, at the end of the day suburbs with wealthy taxpayers have higher revenues, and also spend more on public services than suburbs

whose taxpayers are not so wealthy. These results thus clearly support the SSGI proposition P5 in the Swiss case: the higher the social status of a municipality, the larger the resources available, and the more this municipality spends to support public services, while it is still able to impose a lower tax charge on their residents. Our analysis of the relationship between social expenditures and political variables supports the idea that this stems from a deliberate choice: the wealthy municipalities have an electorate that leans towards the right and is therefore interested in keeping taxes low. A more left leaning municipal electorate, however, is more likely to set a higher tax rate and to increase social expenditures. These observations provide empirical support for proposition P2: municipalities provide the political context by which residents shape the municipal tax-service package according to their political preferences.

Our analysis also presents a clear answer to proposition P7, i.e. that core cities tend to allocate services in favour of the poor. Indeed, cities were found to have higher levels of social expenditures. This can be explained not only by the fact that core cities also benefit from higher levels of public revenue - mainly due to revenues from tax on businesses located primarily in the core cities. The political aspect is equally important: core city electorates lean more to the left and therefore are more likely to favour governmental spending on social policies. Of course, we do not know whether this spending necessarily translates into higher levels of services - for the time being, we have to assume that service efficiency is constant across jurisdictions. Hence, proposition P6 (spending levels are related to service levels in a linear way) could not be tested empirically.

On the whole, our analysis supports the SSGI thesis quite straightforwardly, but also allows some important qualifications, in particular with respect to the effects of higher level government interventions and intergovernmental transfers. On the one hand, we could show that in the governmentally fragmented Swiss metropolitan areas, social policies are not only shaped by the extent of social needs, but also and even more strongly by the availability of public revenues (which is strongly conditioned by the municipal tax base), as well as political preferences. In the fragmented institutional setting of the Swiss metropolis, social policies mainly appear as an act of voluntarism by the rich, rather than a matter of redistribution oriented by principles of social justice. This conclusion is also warranted when we look at variations across the seven metropolitan areas within Switzerland: the relationship between resources and expenditures is stronger in more fragmented settings, and the relationship between needs and expenditures is stronger in less fragmented settings.

On the other hand, however, our analysis suggests that qualifications to the SSGI thesis are needed with respect to the effects of higher level government interventions and intergovernmental coordination. Indeed, we have shown that the mismatch between social needs and social expenditures is moderated by the degree of cantonal centralisation. In more centralised cantons, the link between needs and expenditures is stronger, while the link between public revenues and social expenditures is weaker. This finding strongly supports Elinor Ostrom's argument that higher-level government interventions in metropolitan redistribution can attenuate the SSGI problem. Even though, we yet need to understand to what extent horizontal coordination between municipalities also play a role in this mechanism. Limitations of the data collected for this analysis have not allowed us to delve to the necessary depth of this topic.

Hence, further research is needed to fully understand the workings of the multi-level compound of metropolitan governance and its effects on the shaping of social policies in the metropolitan areas. For the moment, our analysis shows that the SSGI thesis can be supported for the case of Switzerland: although higher-level governments and intermunicipal coordination play an important moderating role, institutional fragmentation of Swiss metropolitan areas still clearly is an important obstacle to the reduction of territorially structured social inequalities.

6. References

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7. Methodological Appendix

The analyses presented in this chapter draw on municipal level data about socio-demographic composition, spatial context and public finances in the year 2010, in the seven largest metropolitan areas in Switzerland – i.e. over or near 200'000 inhabitants (seeTable 1). Most data was provided by the Swiss Federal Statistical Office, the Swiss Federal Tax Administration, the Federal Finance Administration (FFA), and the State Secretariat for Economic Affairs (SECO). Data on local public finance in the seven metropolitan areas under scrutiny was provided by the cantonal statistical offices and the finance administration of the cantons of Aargau, Zurich, Geneva, Vaud, Basel-Landschaft, Solothurn, Berne, Lucerne and Ticino. No financial data could be collected from the cantons of Schwyz, Basel-City, Fribourg and Nidwalden. The following table presents the operationalization of the variables used throughout the analysis.

Table 9: Operational description of variables used

Variable name	definition	missing values
commune-level variables		
Population 2010	Municipal population at 31.12. 2010	0/456
Foreign born 2010 (%)	Foreign born / population size *100	0/456
Unemployment 2010 (%)	Registered unemployed / Total population between 18 and 65 years old *100	8/456
Federal direct tax per capita (2008)	Total federal tax perceived in municipality / population size	0/456
New housing 2010	proportion of dwelling houses built during the last 20 years (without renovations)	0/456
Type of communes 2010	Typology of communes, 4 Types	0/456
Vote for left parties 2007 and 2011	Cumulative percentage of votes for the Social Democratic Party, the Green Party, the Christian Socialist Party, Workers' Party, as well as Solidarités in the 2011 national election	0/456
Municipal Gini-coefficient 2006	Municipal Gini-coefficients taxable income, Federal income tax 2006	1/456
Municipal mean income 2006	Municipal mean taxable income, Federal income tax 2006	1/456
Municipal median income 2006	Municipal median taxable income, Federal income tax 2006	1/456
Local public finance data of metropolitan areas		
Total revenue per capita (2010)	total local revenue / population size	19/456
Total expenditure per capita (2010)	total local expenditure / population size	19/456
Transfer revenues 2010	share of transfer payments revenue relative to total local revenue	19/456
Transfer expenditures 2010	share of transfer payments expenditure relative to total local expenditure	19/456
General administration expenditures	Sum of expenditures of the official functional categories - general administration	19/456
Redistributive expenditures	Sum of expenditures of the official functional categories - health - public transport operation subsidies - social welfare - housing subsidies	19/456
Amenities and other operational costs	Sum of expenditures of the official functional categories - culture and leisure - environment and spatial planning - public safety, local police, fire brigades - libraries - recreation - entertainment	19/456
Tax rate index 2010	index: $100*(t_{ij}/\text{mean}(t_{ij}))$, where: t: tax rate i: commune subscript j: canton subscript	19/456

MA-level variables		
Gini coefficient	$G = \left\| 1 - \sum_{k=1}^{n-1} (X_{k+1} - X_k)(Y_{k+1} + Y_k) \right\|$ where: G: Gini coefficient X: cumulative percentage of population Y: cumulative percentage of either total expenditures, total revenues or redistributive expenditure per capita	Unemployment: 0/7 Finances: 0/7
Metropolitan population	population size of metropolitan area	0/7
Fragmentation (Zeigler-Brunn)	number of communes per 10,000 inhabitants divided by the central city's share of the overall metropolitan population in percent	0/7
Cantonal level variables		
Overall cantonal public expenditures 2010	Total public expenditures by canton 2010	0/13
Overall municipal public expenditures 2010	Total public expenditures by municipalities, aggregated on cantonal level 2010	0/13
Overall cantonal social expenditures 2010	Total social expenditures by canton 2010	0/13
Overall municipal social expenditures 2010	Total social expenditures by municipalities, aggregated on cantonal level 2010	0/13
Total cantonal transfer expenditures 2010	Total transfer expenditures by canton 2010	0/13
Total municipal transfer expenditures 2010	Total transfer expenditures by municipalities, aggregated on cantonal level 2010	0/13

Sources:
- mean income federal income tax, Gini coefficients on communal level (taxable income 2006), mean and median taxable income: Swiss Federal Tax Administration
- local public finance data: statistical offices and finance administrations of cantons
- Unemployed 2010: State Secretariat for Economic Affairs SECO
- Financial statistics 2010: Federal Finance Administration
- all other data: Swiss Federal Statistical Office